Audiometric Exam Module

User Manual

Patch ACKQ*3.0*12
November 2005

Department of Veterans Affairs
V*ist***A** Health Systems Design & Development

Preface

Purpose

ACKQ *3.0*3 was designed to use a consistent, event-driven windows style clinical user interface to provide Audiologists and their staff with an easy way to enter, display, store and utilize the information obtained during the Audiometric exam of a patient. ACKQ*3.0*12 is an update and modification to that patch.

Audience

The information in this manual is intended to aid practitioners in Audiology and Speech Pathology Service (ASPS) in the use of this software.

Benefits

Prior to this patch, there was no VA-wide availability of a way for practitioners to enter, store and view audiograms. Nor was there a central database for those readings. This patch introduces tools for these data entry, storage (both locally and centrally), and display capabilities.

Upon structured entry of clinical hearing loss data through this package, a practitioner can immediately view an audiogram display and print a standard VA form 10-2364 (2005 version). An audiogram can also be printed for hard copy records or copied to the Windows clipboard for inclusion in other electronic documents.

Completed and signed audiograms are stored within the local VistA system. They are also transmitted electronically to the Denver Distribution Center (DDC), where they are stored centrally and are available to facilitate the ordering and maintenance of hearing aids and accessories. This audiometric information is subsequently available whenever a practitioner places a REMOTE ORDER ENTRY SYSTEM (ROES) order.

Related Manuals

Audiometric Module ACKQ*3.0*12 Implementation Guide
Audiometric Module ACKQ*3.0*12 Technical Manual
Audiometric Module ACKQ*3.0*3 Security Manual

Table of Contents

Introduction

1. General Conventions Used

All examples shown in this document are of fictitious patients and information and are meant only to show display features, not actual readings.

Functionality included in ACKQ*3.0*12 is implemented through two software applications, one providing audiometric data entry and one providing audiometric display. These applications use a Microsoft Windows-style graphical interface with typical mouse navigation and field selection. End users can also access editable fields, tab pages and menu options through the use of short-cut key combinations (using the ALT key in combination with some other key). The key to use is shown underlined and capitalized (i.e. Print). Occasionally the user may need to hold down the ALT key to activate the appropriate underlining of characters.

Additional conventions specific to each application are described in the corresponding sections of this document.

2. Applications Included

AUDIOMETRIC EXAM ENTER/EDIT [ACKQROES3E]

AUDIOGRAM DISPLAY [ACKQROES3]

Audiometric Exam Enter/Edit

1. Enter/Edit Conventions

The material on the following pages describes procedures and functional features applying to the navigation and data entry of a patient's audiometric readings. Below are related conventions specific to this application.

The application window includes multiple tab pages. Be sure that the window is sized large enough to see the tabs at the top of the page. Fields that are disabled (cannot be edited) have a grayed appearance. All tab stops have been arranged so the user can proceed in a logical sequence through the editable fields by using the Tab key. When duplicate data entry fields exist for both the right and left ears, keyboard navigation generally progresses through all of the right ear fields first, followed by all of the left ear fields. With patch 12, CNT (could not test) and DNT (did not test) are allowed in the initial fields. Entering either of those values disables the rest of the fields for that level. A 'No Response' is indicated by entering the plus (+) symbol along with the value in the field. If a value is entered in the Masking Level field, that will indicate that the Final test was masked, or if no Final value is entered, the lower non-zero value in the Initial or Retest fields will appear on the graph as masked.

At any time the user can bypass the Tab-key sequence by using the mouse to click in the desired field. Pausing the cursor over an editable field will display a hint giving the acceptable range of values. Inactivated or disabled fields are not reachable with either the Tab key or the mouse.

The File and Help menus appear at the top of all pages. Under the File menu are options to get a different record, save the current record, retransmit the current record to the DDC, print the record, delete the record, view the graphical audiogram display for the current record and exit the application.

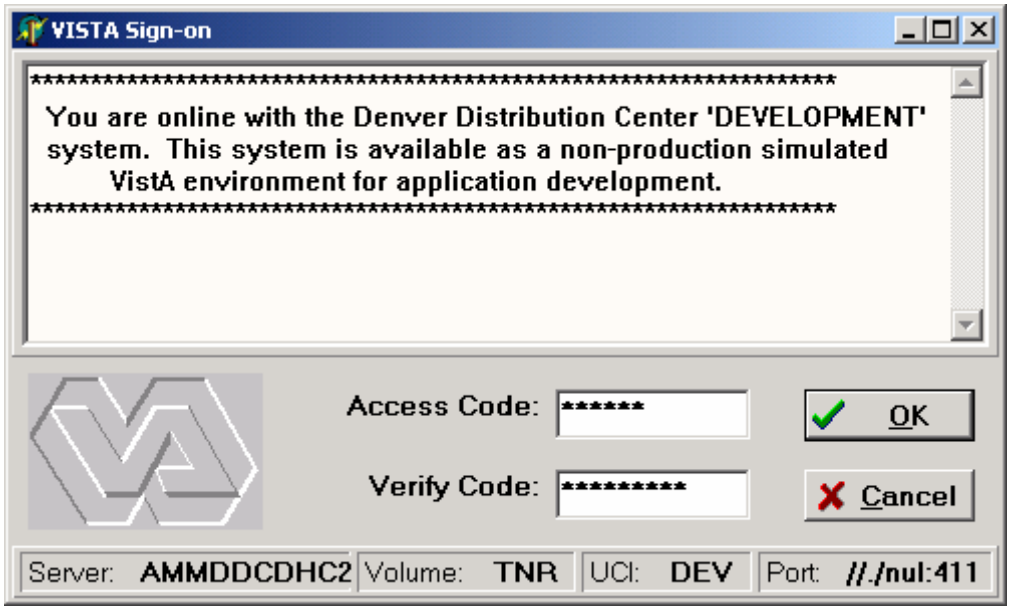
The Save option will be disabled until some value is changed. Likewise, the Retransmit option is disabled until it has been transmitted a first time. It is not necessary for the record to be signed in order to display the audiogram, only that some values have been saved into the record. See the Audiogram Display section for further information.

The Help menu contains the options to display page relevant help and the About Box.

2. Accessing the Enter/Edit

Typically, this application can be invoked from either CPRS or a stand-alone desktop shortcut (see instructions below). If either of these methods is desired but is not available, contact your facility's IRM Service to have the necessary installation or setup procedures completed.

When invoking the application, you will need to log in with your local V*ist*A Access and Verify codes. A form similar to the following will appear.

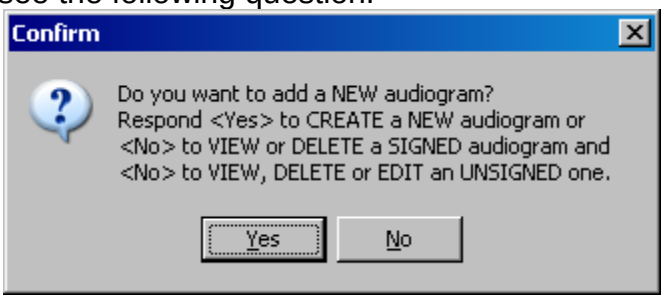


In some cases, an end user may be set up for access to multiple broker environments. If that is the case, refer to Appendix C for further instructions.

Invoking From the Desktop:

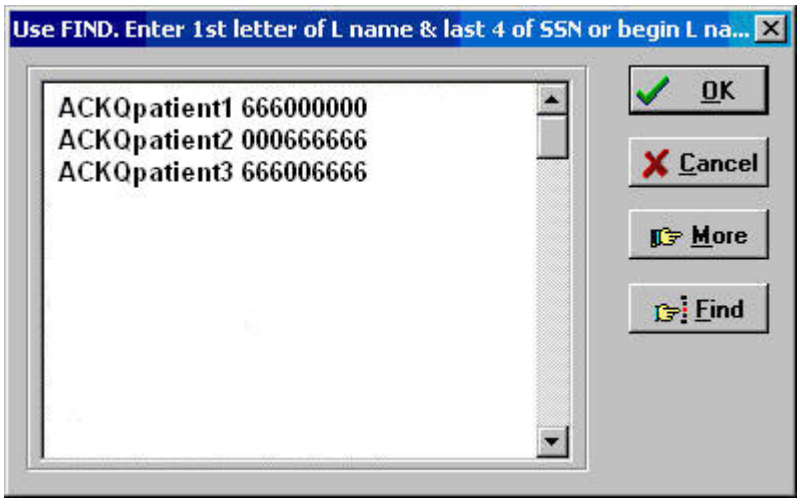
After logging in (if necessary), double-click the desktop icon for the Audiogram Edit application. It will look something like this: 

At this point you will see the following question:



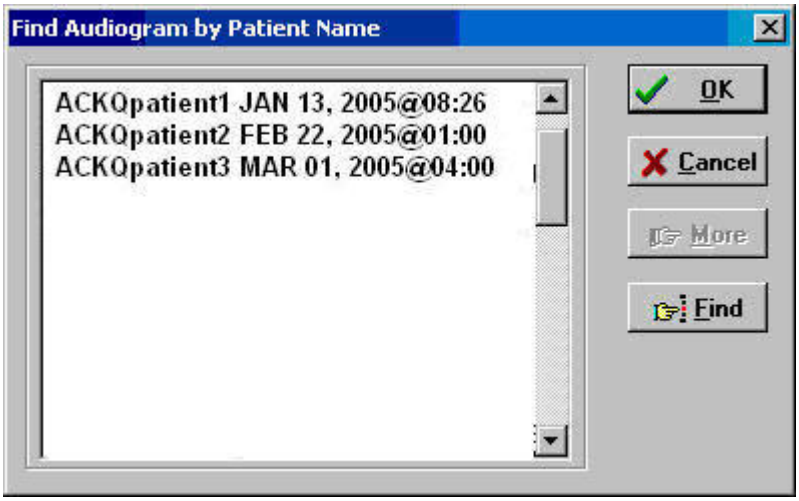
Your response will indicate whether the lookup for the patient is done in the PATIENT file or from the AUDIOMETRIC EXAM file.

If you are adding a NEW Audiogram, you will need to select a patient from the PATIENT file.



To facilitate the lookup, select 'Find' and enter the Last Name of the patient, the SSN or the first letter of last name and last four of the SSN format.

Or if you are editing or deleting an existing audiogram, the patient will be selected from the AUDIOMETRIC EXAM file.



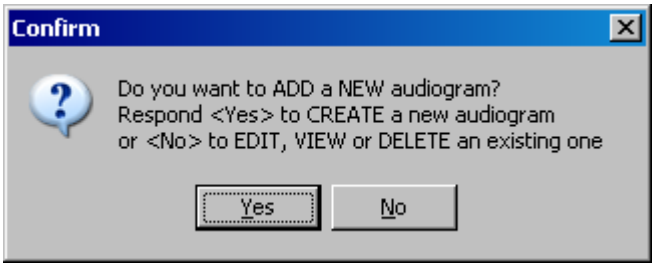
With either above screen, press the  button if the patient does not appear on the initial list from the file.

These instructions continue in the section: Continuing On.

Invoking From CPRS:

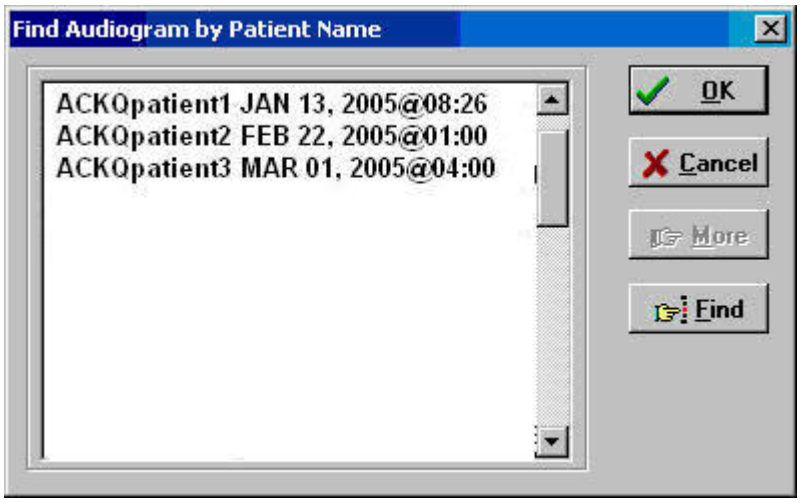
From the *Cover Sheet* in the CPRS application, click on the Tools menu. *Audiogram Edit* should be one of the options on that menu. Since a patient has already been selected in CPRS, you will not have to choose one.

At this point you will see the following question:

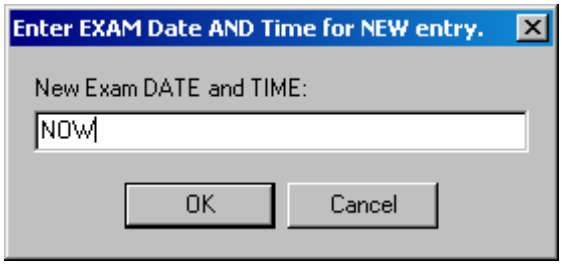


Continuing On:

If you are *not entering a new record* and *more than one record exists* for the patient, you will need to select the specific exam from a screen similar to the following, and continue the instructions in the Entry Tab Section.



If you are entering a new record for the patient you will need to enter a new exam time to establish the record:



Note: Exam DATE *and* TIME must be included in this space for a new record to be created.

You may enter any of the standard VA FileMan date/time formats (Appendix E). At this point, a new record is set up in the file and the age of the patient is calculated.

When this box is closed the introductory tab page is shown, and you will continue on to the *Audiometry Entry* tab, as shown in the next section.

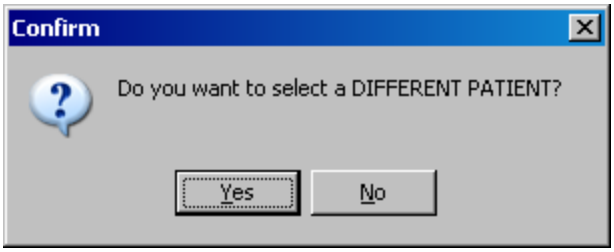
3. Audiometry Entry Tab

You may need to adjust the screen with the scroll bar on the right of the form to see areas of the form you need. In patch ACKQ*3.0*3, all actions occurred as a result of buttons at the bottom of the form. The buttons have been replaced, in patch ACKQ*3.0*12, by menu actions under the File and Help menus at the top of the form. These options are available from all of the tab pages.

and

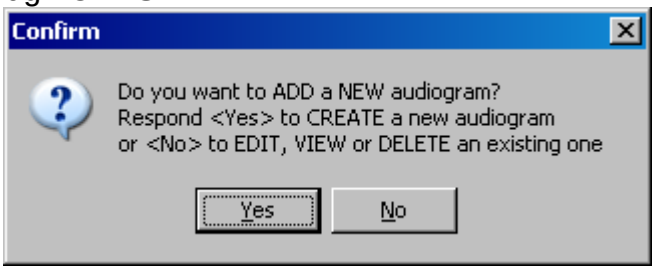
In addition to the previous *Help*, *Save, Print, View Audiogram* and *Exit* options, new options have been added. They are:

1. Change to a different record (or patient if coming in from the desktop). If entering from the desktop, you will see the following prompt before proceeding to select another patient.



Entering a 'Yes' will take you back to the patient selection form in the Continuing On section.

If you enter a 'No' response, you will go directly to the prompts for the same patient, as though coming in through CPRS.

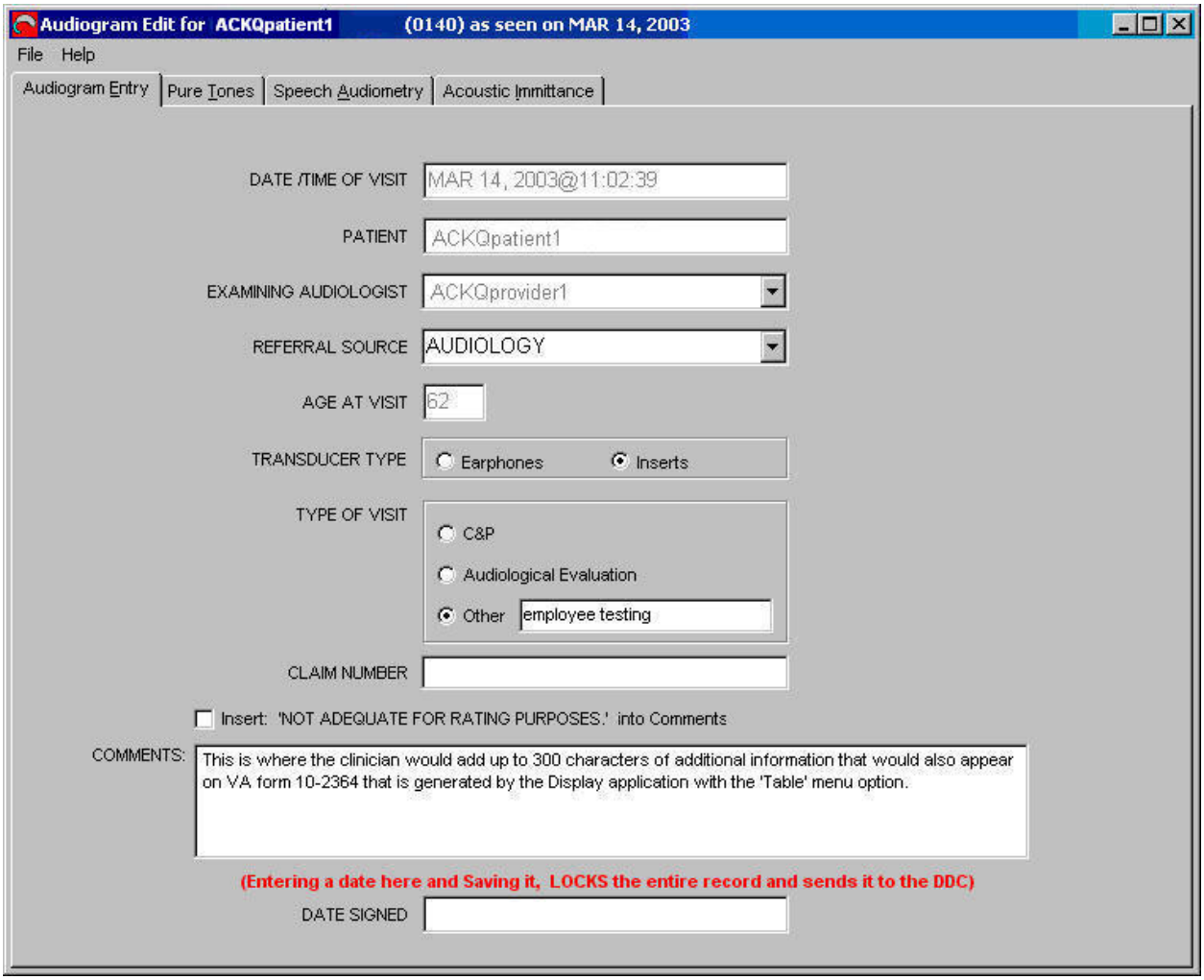


2. Delete the current record (will also transmit a deletion message to the DDC if it had been signed). You will receive a confirmation message.

3. Retransmit (for records previously signed, but transmitted at a time when only the air and speech results were transmitted). You will receive a confirmation message and the retransmission date will show up on the entry tab.

4. The About box was added to comply with VA GUI standards.

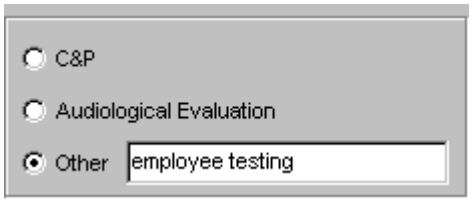
The *Audiogram Entry* page collects and displays basic patient and visit information. You can return to it at any time by clicking on the tab or entering ALT+E. The DATE/TIME OF VISIT, PATIENT, and the AGE AT VISIT are calculated when the record is created and are not editable.



The EXAMINING AUDIOLOGIST field is selectable from the New Person file (#200). Both the name and the title of the person selected are displayed on the audiogram. Entry of the first few characters of the person's last name will assist in the lookup.

The REFERRAL SOURCE is selectable from the Hospital Location file (#44). Again, putting in the first few letters of the location will assist in the lookup. Naming for these locations may vary from facility to facility.

If "Other" is selected from the TYPE OF VISIT radio buttons, a free text entry of 2 to 26 characters may be entered in the box to the right of the button. It will be stored in the record and appear on VA Form 10-2364.



With patch ACKQ*3.0*12, the ‘Claim Number’ and ‘Comments’ sections have been added and will be saved in the record and will also display on VA Form 10-2364.

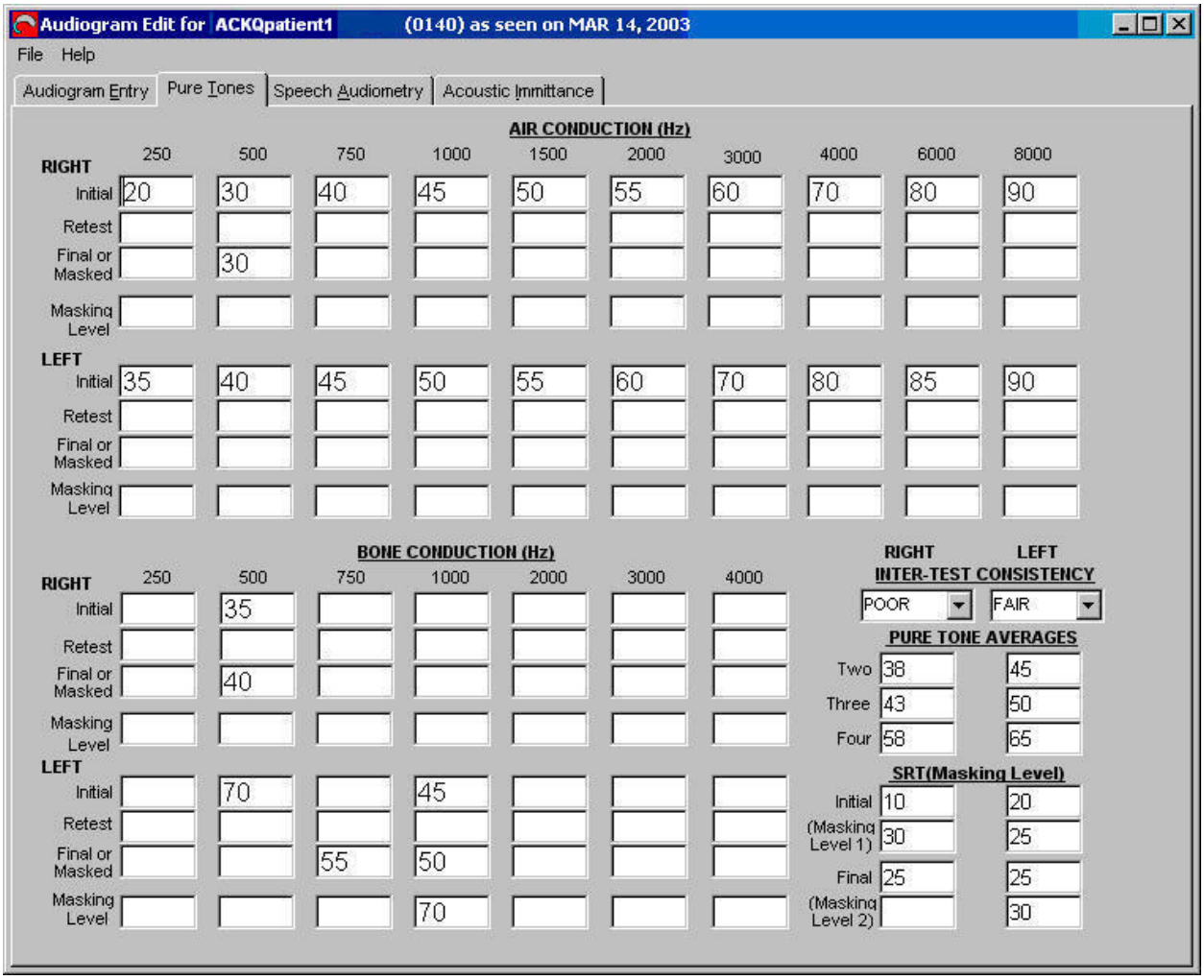
A checkbox has been added in patch ACKQ*3.0*12 to insert the text: “NOT ADEQUATE FOR RATING PURPOSES”. This option should be checked only when the thresholds cannot be used for rating of C&P claims. This can happen when (1) the testing was not done according to C&P protocols or (2) the thresholds are not reliable. The latter condition could occur in C&P exams.

DATE SIGNED refers to the date that the information is verified as accurate, and once a date is entered into that field, the record is considered final and approved and the values are transmitted to the DDC database. Once the record is sent to the DDC, the Retransmit option will be activated. This allows records at the DDC to be updated with information that was not included in transmissions from patch ACKQ*3.0*3.

With patch ACKQ*3.0*12, a record may also be deleted if the entering user realizes there was an error in a record. If a record is deleted (from the File drop down menu at the top of the form) after the DATE SIGNED value has been filled in and saved, then the deletion will also be transmitted to the DDC and deleted from the national database.

4. Pure Tones Tab

Click on the *Pure Tones* tab or enter ALT+T to make the *Pure Tones* tab active. This tab allows for entry of pure tone threshold values across a standard range of frequencies as a measure of hearing loss.



Instructions for this page are on the following page.

Threshold values for each frequency tested should be entered into the corresponding input field. If the cursor is paused over an editable field, a hint with acceptable values is displayed. Along with numerical values, 'DNT' (Did not test) and 'CNT' (Could not test) can be entered in the Initial fields only. If 'DNT' or 'CNT' are entered, the other fields under that value will be disabled.

If entering only unmasked thresholds, enter thresholds in the INITIAL field. If entering a second set of unmasked readings, they should be placed in the RETEST fields. When you are entering masked thresholds, enter thresholds in the FINAL/MASKED fields and the masking level in the MASKING LEVEL field directly below it.

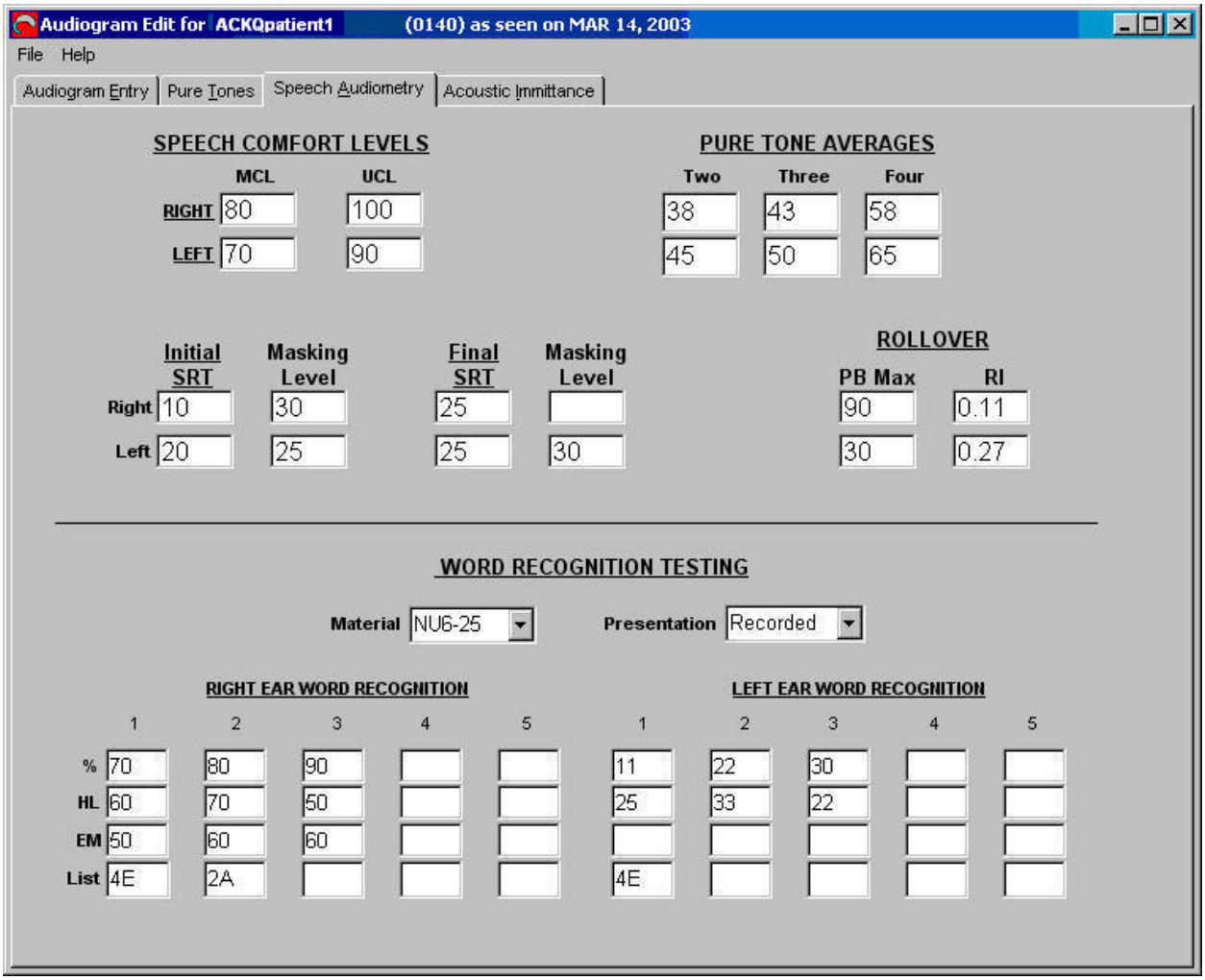
If a value is entered in the 'Final or Masked' field, it will appear on the graph. If 'Masking Level' fields are enabled and a value is entered in that field, the final value on the Audiogram Display will appear as masked. If a 'Final' value is not entered and a value for 'Masking Level' is entered, the lower non-zero value between the 'Initial' and 'Retest' fields will appear as masked.

The Pure Tone Averages (PTA) are automatically calculated when sufficient information is entered. See Appendix D for further explanation.

5. Speech Audiometry Tab

Click on the *Speech Audiometry* tab or enter the shortcut key combination ALT+A to make the Speech Audiometry tab active.

This page displays the Pure Tone Averages (see Appendix D) from the Pure Tones page and allows for entry of comfort levels, effective masking levels and word recognition information. The PB Max and RI fields are calculated when sufficient information is entered.
See Appendix B for further information.



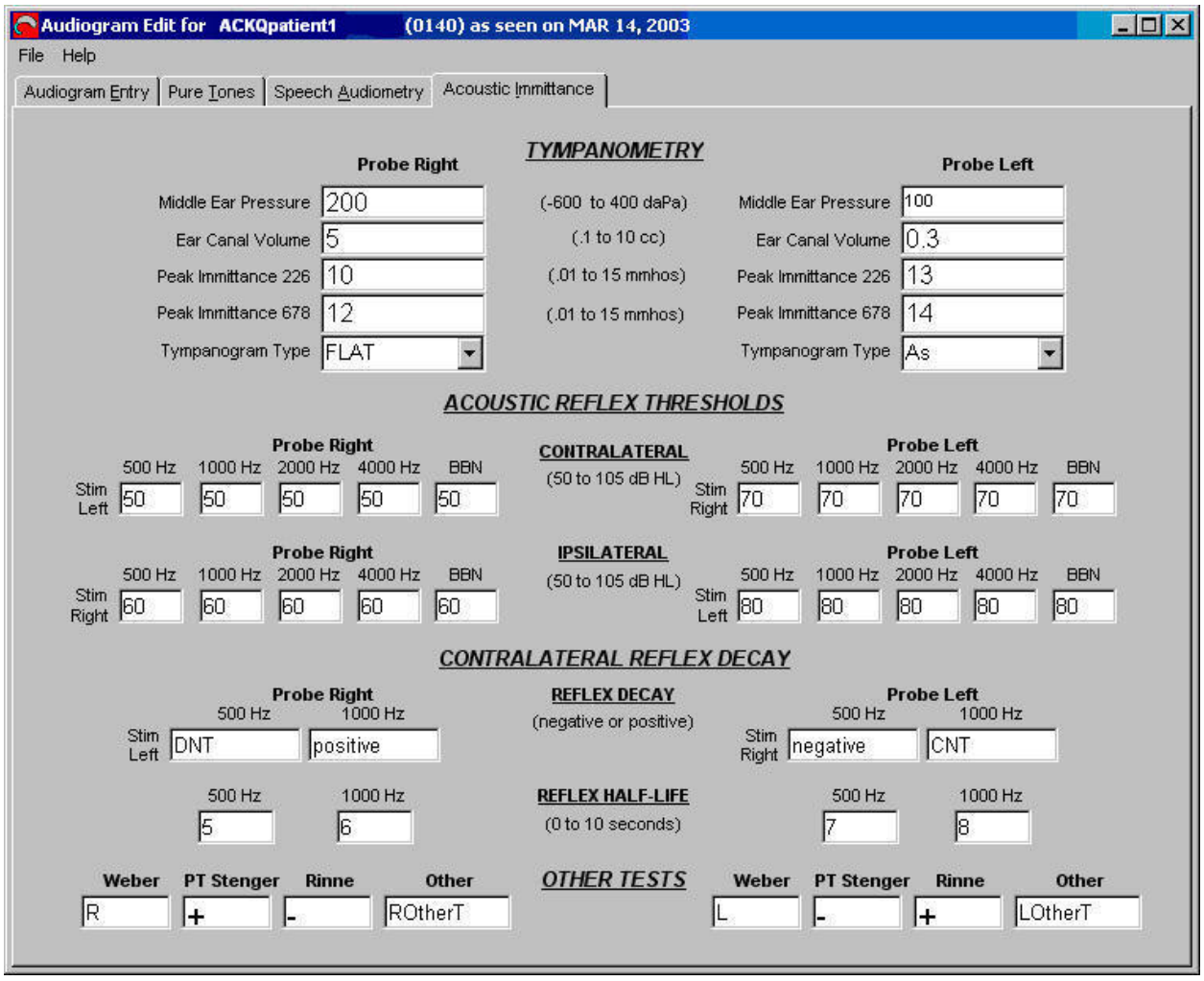
‘Initial SRT’ refers to the first Speech Reception Threshold readings obtained during testing. If ‘CNT’ or ‘DNT’ are entered in the initial field, other SRT fields for that ear will be disabled. Values obtained after masking, re-instructing the patient, or retesting for reliability purposes should be placed in the ‘Final SRT’ field. If data is in both fields, the retest data will be displayed on the graphic audiogram.

In the WORD RECOGNITION TESTING section, the ‘Material’ selection includes both 25 and 50 word lists of the most commonly used lists and the ‘Presentation’ section allows selections of commonly used forms. As of patch 12, these two choices apply to both ears.

The cursor may be paused over any editable field to see a hint regarding acceptable values or reference the help screen from the menu at the top of the page. The display of hints may be toggled on or off from the menu, though hints are not available once the record is signed.

6. Acoustic Immittance Tab

Click on the *Acoustic Immittance* tab or enter ALT+I to make the Acoustic Immittance tab active. This tab allows for entry of TYMPANOMETRY, ACOUSTIC REFLEX THRESHOLDS, REFLEX DECAY and OTHER TESTS (e.g. Weber, Rinne, Stenger, etc).



As before, if the cursor is paused over an editable field a hint with acceptable values is displayed.

In entering the level of the acoustic reflex threshold, the maximum allowed level is 105 dB HL. If there is no response at the maximum permissible level or the patient's comfort level, then enter the value followed by +. The level must be documented on the enter/edit screen. While many audiologists enter A (absent) or NR (no response), this format does not indicate the level used, nor does it protect the audiologist from accusations by the patient that the presentation level was injurious. On the symbolic

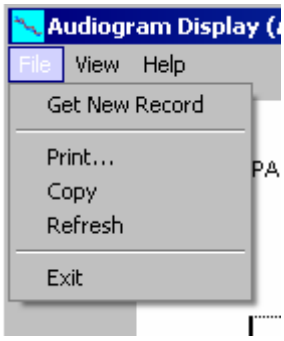
audiogram, the appropriate symbol will be displayed at the specified level. If there is no response (e.g. 105+), the "no response" reflex symbol will be displayed at the specified level. On the tabular audiogram (VA Form 10-2364), the numeric value will be displayed. CNT (could not test) and DNT (did not test) are allowed.

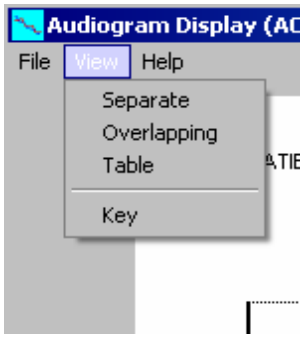
The Audiogram Display

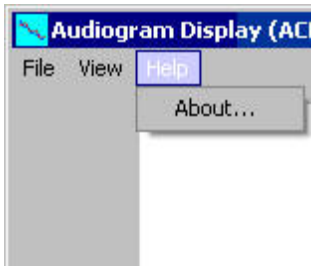
1. Display Conventions

All data in the display examples in this document is test data only and may not reflect normal readings from real patients. See Appendix A for an explanation of how values from the record are selected to appear on the graph when more than one reading is entered (e.g. Initial, Retest and Final).

All menu options at the top of the display are available with short-cut keys also. If the index character does not appear underlined automatically, underlining will appear by holding down the ALT key. Pressing the ALT key and the underlined letter key will trigger the option.

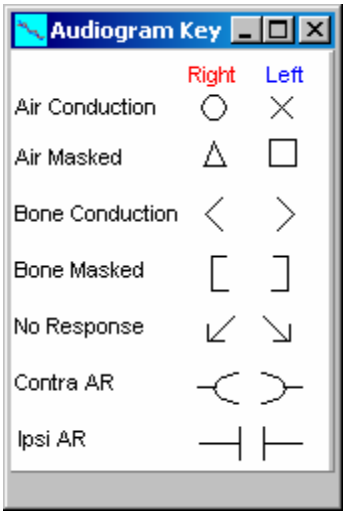






With patch ACKQ*3.0*12, a couple new options were added to the already existing *Print, Copy, Exit, Separate, Overlapping, Table* and *Key* options. You may go to another record for the patient (if entering from CPRS) or select a new patient and record (if entering from the Desktop icon). You do that from *Get New Record* option on the *File* menu. You may also view the *About* box from the *Help* menu.
The *Print* menu bar selection will print the current view of the audiogram to a selected printer.
The *Copy* menu bar selection will copy the current view of the audiogram to the Windows clipboard, from where it may be pasted into any picture-ready document (e.g., MS Word).
The *Refresh* option will update the current display with new data that may have been entered and saved after the display was activated.
The *Separate, Overlapping*, and *Table* views are described and illustrated in the following sections.

The *Key* option will display the symbols used on the graphical audiogram as follows.



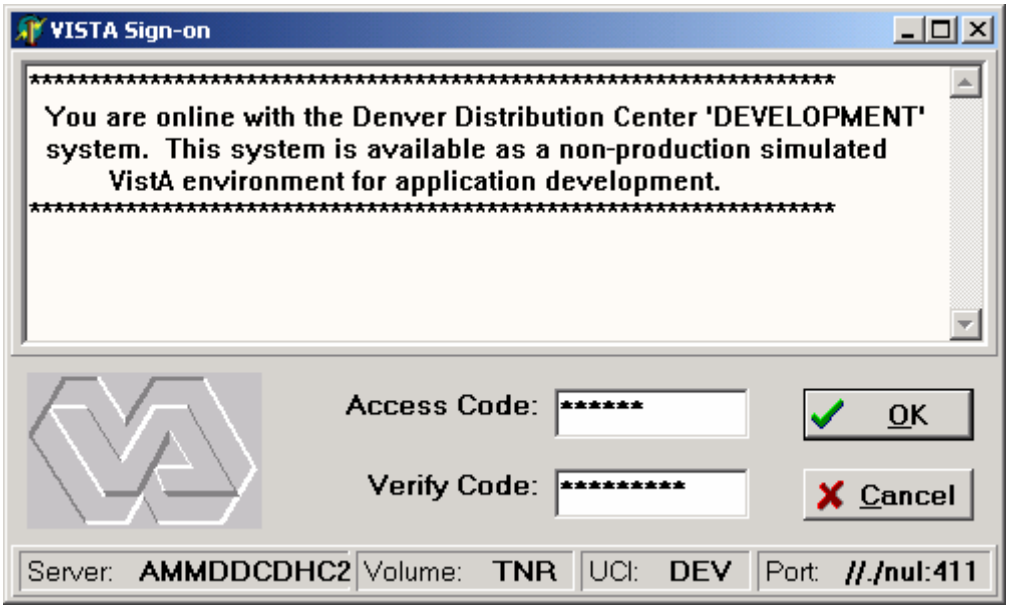
The frequency, in Hertz (Hz), is represented logarithmically on the horizontal axis (abscissa) in values from 125 to 8000 Hz. The dashed lines for 750, 1500, 3000, and 6000 Hz are placed on the graph in the logarithmic position. The hearing level (HL), in decibels (dB), is represented on the vertical axis (ordinate) in values from -10 to 120. See Appendix D for further information.

Pure Tone symbols are drawn on the display so that the midpoint of the symbol centers on the vertical ruling and the horizontal axis at the appropriate hearing level. Additional symbols will be offset from the Pure Tone symbols.

Bone-conduction symbols are drawn adjacent to, but not touching the frequency coordinate ruling and centered vertically at the hearing level. The symbol for the left ear is placed to the right of the vertical ruling and that for the right ear is to the left of the vertical ruling.

2. Accessing the Audiogram Display

Typically, this application can be invoked from either CPRS or a stand-alone desktop shortcut (see instructions below). If either of these methods is desired but is not available, contact your facility's IRM Service to have the necessary installation or setup procedures completed. You will be prompted to log in with your local V*ist*A Access and Verify codes. A form similar to the following will appear.

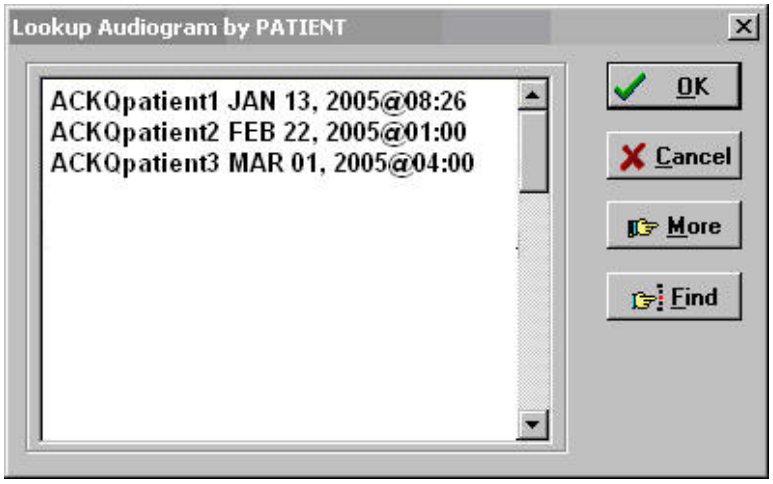


In some cases, an end user may be set up for access to multiple broker environments. If that is the case, refer to Appendix C for further instructions.

Invoking From the Desktop:

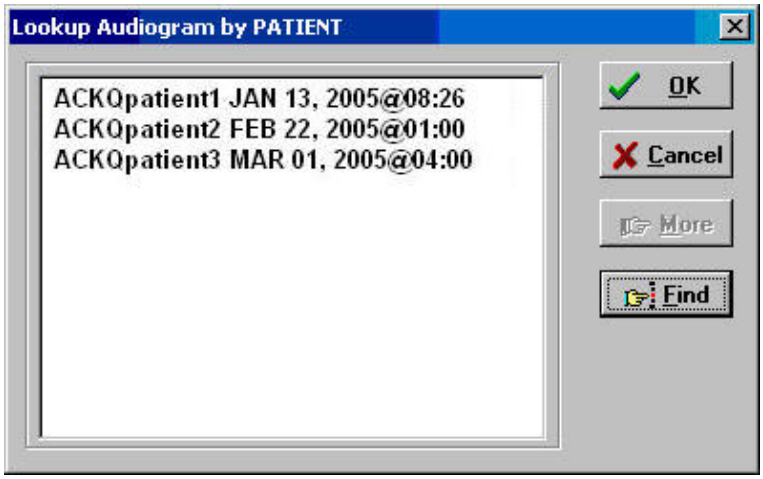
Double-click the desktop icon for the *Audiogram Display* application. 

After logging in to your local broker system (as above), you will need to select a patient from the AUDIOMETRIC EXAM file.



Select an individual audiogram or use the Find button 

and enter the beginning of the patient's name for faster lookup. This will shorten the list of audiograms to those for that particular patient.

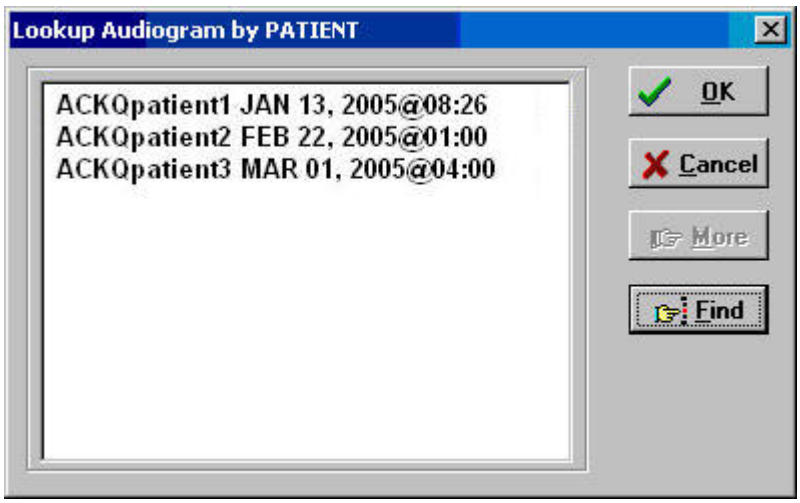


Invoking From CPRS:

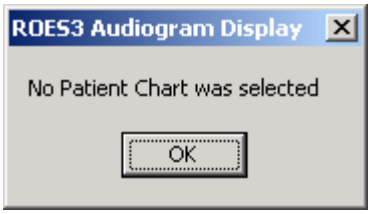
From the *Cover Sheet* in the CPRS application, click on the Tools menu. *Audiogram Display* should be one of the options on that menu. Since a patient has already been selected in CPRS, you will not have to choose one. Then select a record from a list of audiograms in the Audiometric Exam Data file (#509850.9) that matches the name entered. (Be sure to highlight the selected line before pressing OK.

If a match was not found, you will receive the following notice:

At this point you may select, or click on the Find button to narrow the search again.



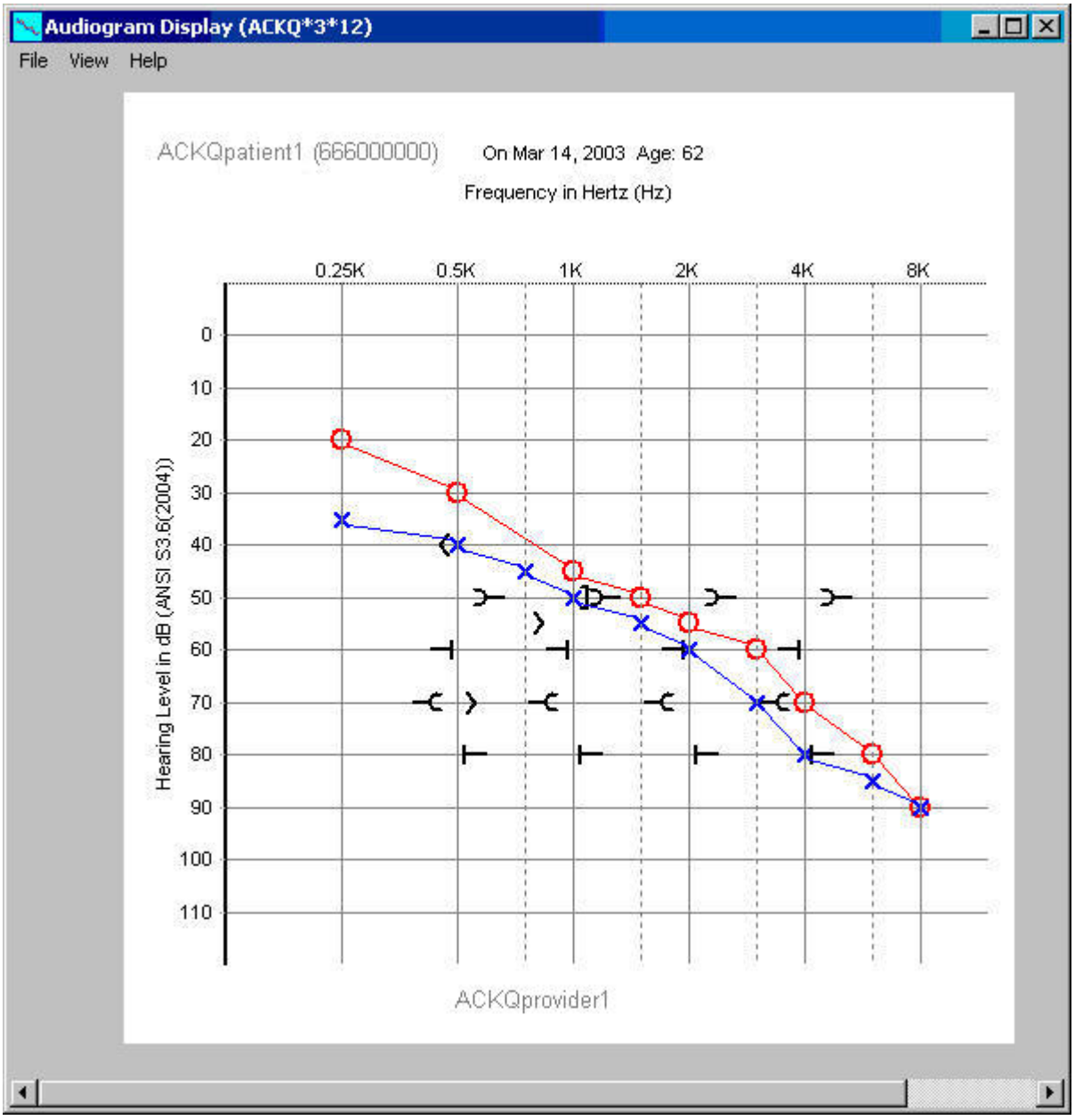
If no record is available or you do not select to view one, you will receive the following alert message.



The application will then terminate.

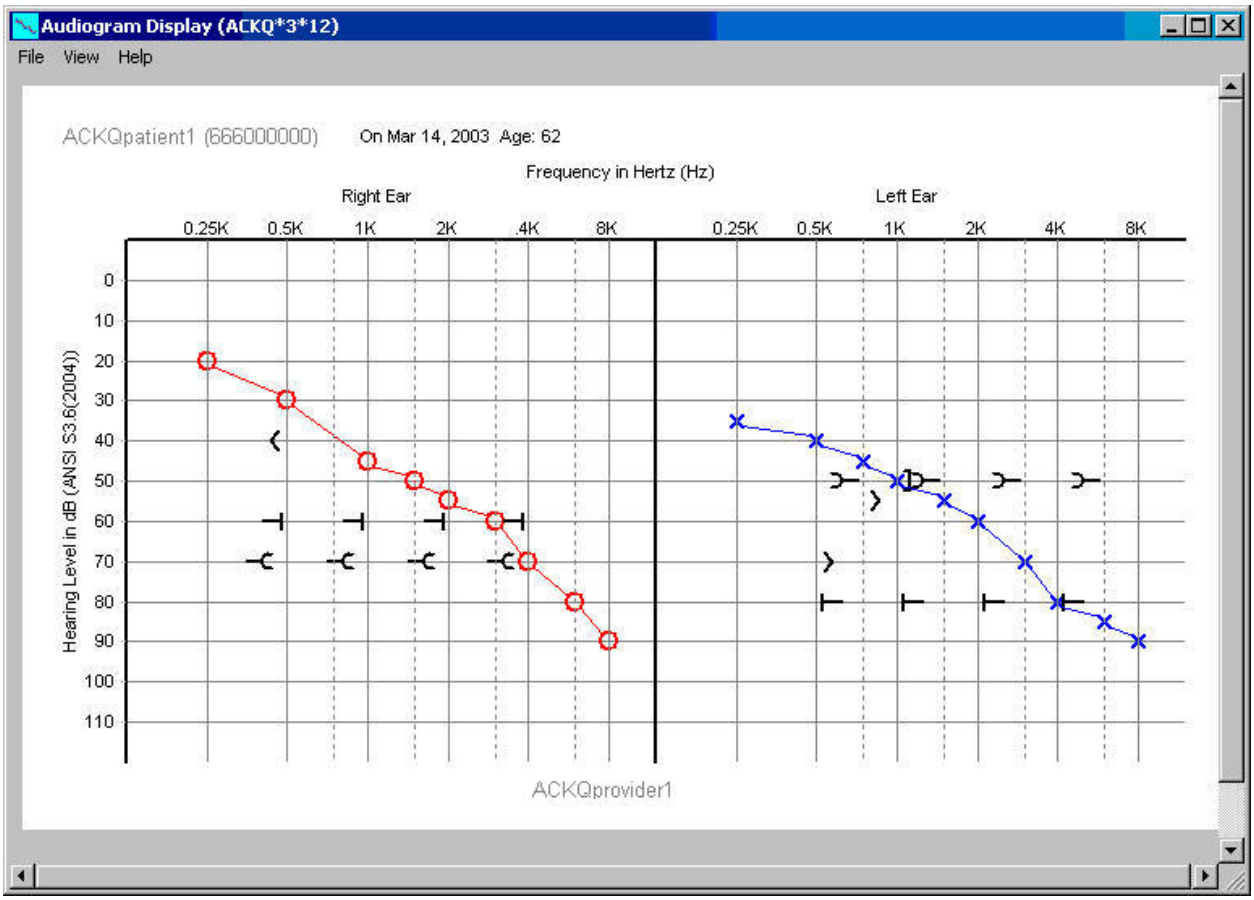
3. Audiogram in Overlapping View

The default view shows the audiogram with overlapping right ear and left ear series. As is common practice, the right ear series displays in red and the left ear series in blue. Note the choices on the menu bar (see previous section on Display Conventions).



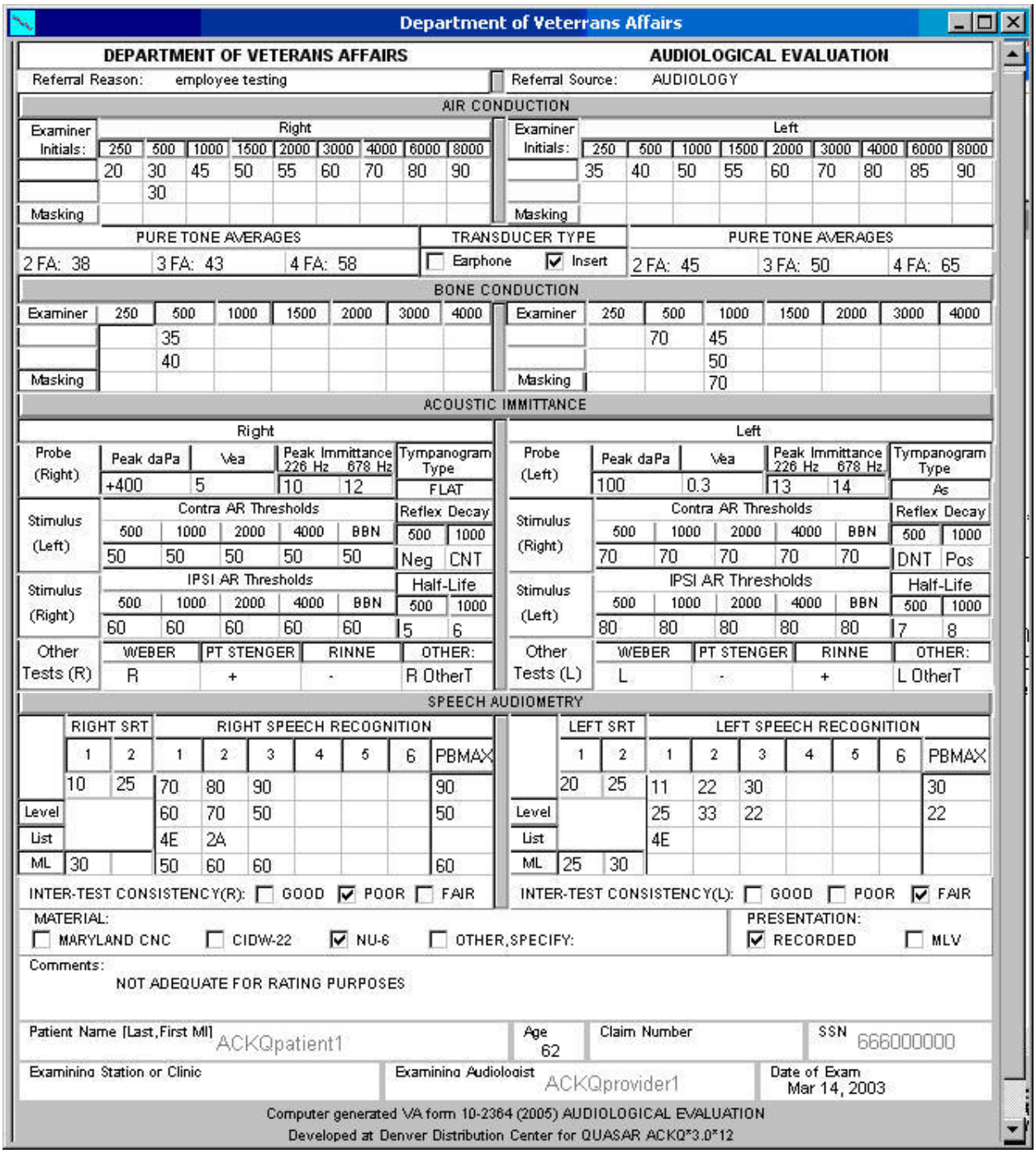
4. Audiogram in Separate View

The default view displays overlapping right and left ear measurements, but right and left ear graphs may be separated for a clearer view of each ear. In the revised version (ACKQ 3.0*12) the left ear is on the right side and the right ear is on the left side, consistent with the tabular audiogram format (VA Form 10-2364). Use the *Separate* selection on the View menu to see the audiogram in this format, and the *Overlapping* selection to return to the default view. All views display the date of the exam and age of the patient on that date above the audiogram. The name and title of the person who conducted the exam appear below the audiogram.



5. Audiogram in Table View (VA form 10-2364)

The *Table* menu bar selection, presents a computer-generated VA Standard Form 10-2364 containing the values from the selected audiogram. The values in the form are intended only for printing or viewing. As of patch 12, the comment is pulled from the database and is not editable on the 2364. The Referral Reason is taken from the 'Type of Visit' field in the Edit program.



Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS — **AUDIOLOGICAL EVALUATION**

Referral Reason: employee testing | Referral Source: AUDIOLOGY

AIR CONDUCTION

Right	Examiner Initials:	250	500	1000	1500	2000	3000	4000	6000	8000
		20	30	45	50	55	60	70	80	90
			30							
	Masking									

Left	Examiner Initials:	250	500	1000	1500	2000	3000	4000	6000	8000
		35	40	50	55	60	70	80	85	90
	Masking									

PURE TONE AVERAGES: 2 FA: 38 | 3 FA: 43 | 4 FA: 58

TRANSDUCER TYPE: ☐ Earphone ☑ Insert

PURE TONE AVERAGES: 2 FA: 45 | 3 FA: 50 | 4 FA: 65

BONE CONDUCTION

Right	Examiner	250	500	1000	1500	2000	3000	4000
			35					
			40					
	Masking							

Left	Examiner	250	500	1000	1500	2000	3000	4000
			70	45				
				50				
	Masking			70				

ACOUSTIC IMMITTANCE

Right	Probe (Right)	Peak daPa	Vea	Peak Immittance 226 Hz	678 Hz	Tympanogram Type
		+400	5	10	12	FLAT

Right	Stimulus (Left)	Contra AR Thresholds 500	1000	2000	4000	BBN	Reflex Decay 500	1000
		50	50	50	50	50	Neg	CNT

Right	Stimulus (Right)	IPSI AR Thresholds 500	1000	2000	4000	BBN	Half-Life 500	1000
		60	60	60	60	60	5	6

Right	Other Tests (R)	WEBER	PT STENGER	RINNE	OTHER:
		R	+	-	R OtherT

Left	Probe (Left)	Peak daPa	Vea	Peak Immittance 226 Hz	678 Hz	Tympanogram Type
		100	0.3	13	14	As

Left	Stimulus (Right)	Contra AR Thresholds 500	1000	2000	4000	BBN	Reflex Decay 500	1000
		70	70	70	70	70	DNT	Pos

Left	Stimulus (Left)	IPSI AR Thresholds 500	1000	2000	4000	BBN	Half-Life 500	1000
		80	80	80	80	80	7	8

Left	Other Tests (L)	WEBER	PT STENGER	RINNE	OTHER:
		L	-	+	L OtherT

SPEECH AUDIOMETRY

RIGHT SRT		RIGHT SPEECH RECOGNITION						
1	2	1	2	3	4	5	6	PBMAX
10	25	70	80	90				90
		60	70	50				50
		4E	2A					
30		50	60	60				60

LEFT SRT		LEFT SPEECH RECOGNITION						
1	2	1	2	3	4	5	6	PBMAX
20	25	11	22	30				30
		25	33	22				22
		4E						
25	30							

INTER-TEST CONSISTENCY(R): ☐ GOOD ☑ POOR ☐ FAIR

INTER-TEST CONSISTENCY(L): ☐ GOOD ☐ POOR ☑ FAIR

MATERIAL: ☐ MARYLAND CNC ☐ CIDW-22 ☑ NU-6 ☐ OTHER,SPECIFY:

PRESENTATION: ☑ RECORDED ☐ MLV

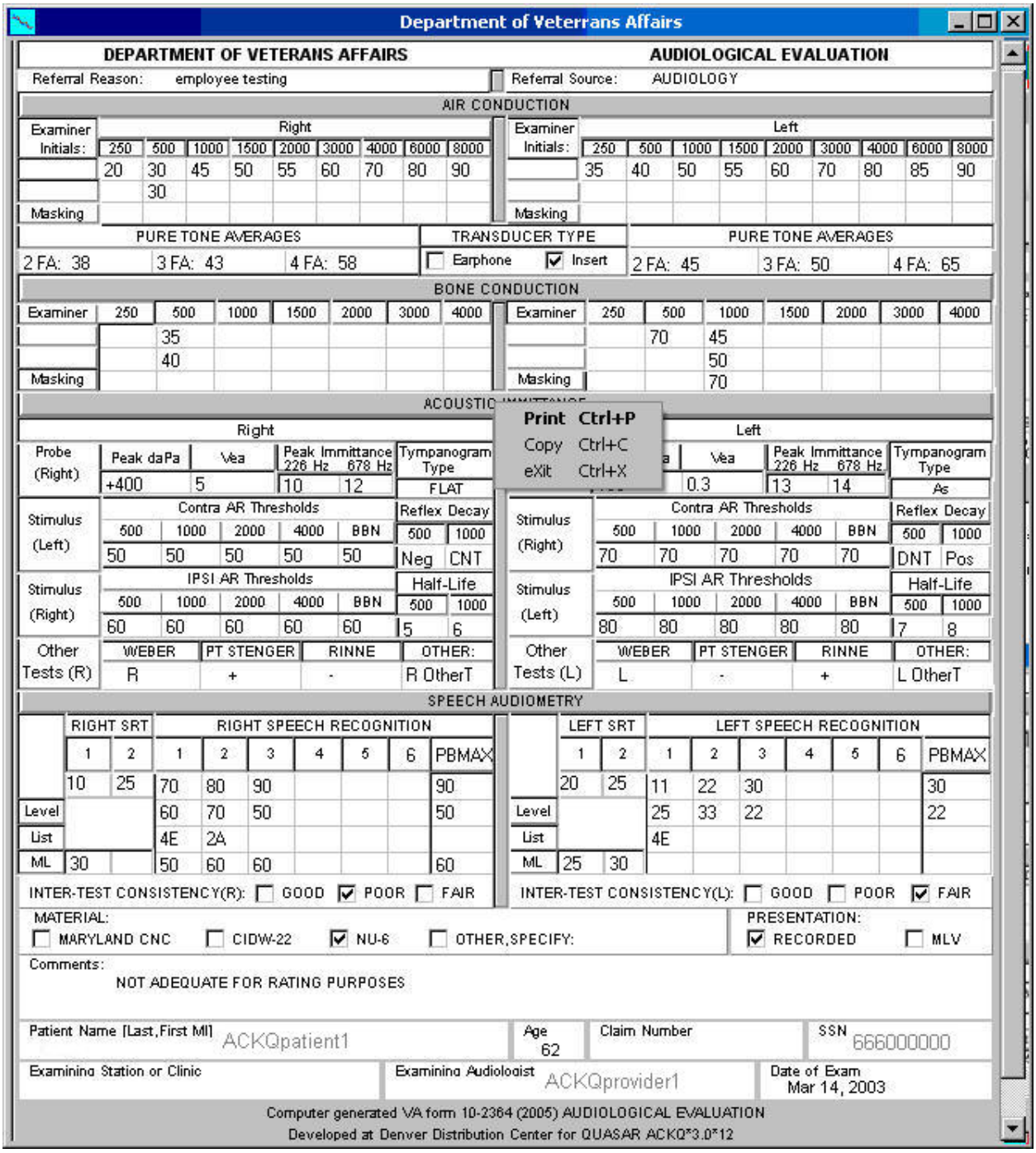
Comments: NOT ADEQUATE FOR RATING PURPOSES

Patient Name [Last,First MI] ACKQpatient1 | Age 62 | Claim Number | SSN 666000000

Examining Station or Clinic | Examining Audiologist ACKQprovider1 | Date of Exam Mar 14, 2003

Computer generated VA form 10-2364 (2005) AUDIOLOGICAL EVALUATION
Developed at Denver Distribution Center for QUASAR ACKQ*3.0*12

The options to *copy*, *print* and *exit* this form are available by clicking with the *right mouse button*, while the cursor is over the form.



Glossary

Acronyms used in this manual

AC	Air Conduction
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AR	Acoustic Reflex
ASPS	Audiology & Speech Pathology Service
BBN	Broad Band Noise
BC	Bone Conduction
C&P	Compensation and Pension
CAR	Contralateral Acoustic Reflex
cc	Cubic Centimeter
CNC	Consonant Nucleus Consonant
CNM	Could Not Mask
CNT	Could Not Test
CPRS	Computerized Patient Record System
daPa	decaPascal
dB	Decibel
DDC	Denver Distribution Center
DNT	Did Not Test
EM	Effective Masking
FA	Frequency Average
GUI	Graphical User Interface
HL	Hearing Level
Hz	Hertz
IAR	Ipsilateral Acoustic Reflex
MCL	Most Comfortable Loudness
ML	Masking Level
MMHO	Millimho (mmho is a measure of acoustic admittance)
NR	No Response
NU	Northwestern University
PB	Phonetically Balanced
PI/PB	Performance Intensity-Phonetically Balanced words (see Appendix B)
Pr-L	Probe Left
Pr-R	Probe Right
PSAS	Prosthetics & Sensory Aids Service
PTA	Pure Tone Average (see Appendix D)
RI	Rollover Index

SAT	Speech Awareness Threshold
SRT	Speech Reception Threshold
SSN	Social Security Number
UCL	Uncomfortable Loudness
Vea	Acoustic Equivalent Volume (same as Equivalent Ear Canal Volume Vec)

Appendices

A: Determination of Series Values for Display

Some of the key rules applied in preparing series values for display in the *Audiogram Display* application are as follows:

The initial, retest and final thresholds and the final masking level are obtained. The following rules are checked in sequence until a point is obtained:

1. If the initial value is ‘CNT’ or ‘DNT’ there will be no point on the graph.
   Each of the following values will contain the masking level (if one exists).
2. If the final reading has a value (including ‘+’) it will be used.
3. If the retest value is “” then the initial value is used.
4. If the initial value is “” then the retest value is used.
5. If initial contains ‘+’ and retest does not, then retest is used.
6. If the initial does not contain ‘+’ and the retest does, then initial is used.
7. If initial is less than retest, then initial is used.
8. Whatever is in retest is used.

If the selected point indicates a 'No Response' (+), there will be a gap in the series.

B: Calculation of PB MAX And RI (Rollover)

Calculation of PB MAX and Rollover Index (RI) values in the Audiometric Exam Enter/Edit application is based on specific industry-standard formulas established for these measurements. Basic descriptions of some of these formulas are as follows:

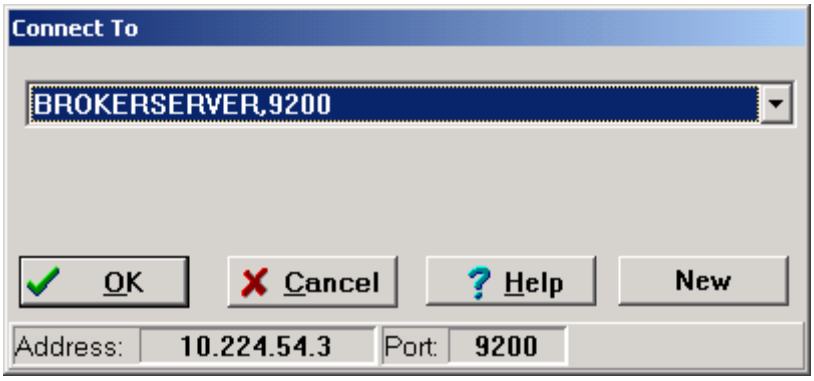
PB MAX is the maximum percentage from the word recognition testing.

PB MIN is the minimum percentage from the word recognition testing.

Rollover is an indice of possible retrocochlear pathology.
It is calculated from the formula: (PB MAX - PB MIN) / (PB MAX).
Rollover Index is significant when it exceeds .40.
The Rollover index will assess multiple scores and levels in one ear. The calculation will occur only when a second score obtained at a higher presentation level, is poorer than a prior score at a lower presentation level. The result is always a value less than 1.0.

C: Having Access to Multiple Broker Environments

If you have additional access to a training or development broker environment, you may need to select the environment you want to use from a form like the following:



By selecting the correct server name from the drop down list, you will access the correct environment. (Using the down arrow key will also move from one selection to another) See your local IRM or ADPAC to obtain the correct server name.

D: Calculation of Pure Tone Averages

Pure Tone Averages (PTA) displayed in the Audiometric Exam Enter/Edit application are automatically calculated and supplied when sufficient information is entered. At each level, the numbers used are the ones that would appear on the graph for that level.

The Frequency Average (FA) formulas used are:
2FA = Average of the lowest two readings from 500, 1000, and 2000 Hz.
3FA = Average of readings from 500, 1000 and 2000 Hz.
4FA = Average of readings from 1000, 2000, 3000 and 4000 Hz.

Rounding 5's
When a number is exactly between two whole numbers (e.g. 3.5 is exactly half way between 3.0 and 4.0), it makes just as much sense to round it down as it does to round it up. Most of the time there is no harm in using the 'always round up' rule (used by QUASAR). This is the rule often taught in schools and often used by many computer programs. However, this rounding rule can cause problems when adding a very large number of values (e.g. in accounting). The sum that one gets will be a little bit bigger than it ought to be. This can be a very serious problem in large computer programs. When thousands or even millions of additions are being performed, the accumulated round-off error can be quite large. In statistics, this bias might be significant.

One way of dealing with this problem is the *even-odd rule* (used by ROES Audiogram). This rule says that:
If the 5 is the last significant digit and the round-off digit (the one to the left of the .5) is odd, round up.
If the five is the last significant digit and the round-off digit is even, don't round up.
Actually, one could reverse *even* and *odd* in this rule. All that matters is that about half the time one will be rounding up when .5 occurs, and half the time down. This avoids a systematic bias. In some cases a bias is desirable. For example, the Internal Revenue Service recommends the 'always round up' rule on tax returns. The 'always round up' rule might be used in compensation claims because it always favors the veteran.

NOTE: QUASAR and the CPRS audiogram use the same rounding rules for decimal fractions 0 to 4 and 6 to 9. The two systems differ on rounding decimals exactly equal to .5. The rounding rule used in this program is: If the average is exactly halfway between two whole numbers, the result will go to the even number. This method of rounding is often called "Banker's Rounding".

E: VA FileMan Date/time Formats

Examples of Valid Dates:

JAN 20 1957 or 20 JAN 57 or 1/20/57 or 012057
T (for TODAY), T+1 (for TOMORROW), T+2, T+7, etc.
T-1 (for YESTERDAY), T-3W (for 3 WEEKS AGO), etc.

If the year is omitted, the computer uses CURRENT YEAR.
Two-digit year assumes no more than 20 years in the future, or 80 years in the past.
If only the time is entered, the current date is assumed.

Follow the date with a time, such as JAN 20@10, T@10AM, 10:30, etc.
You may enter a time, such as NOON, MIDNIGHT or NOW.
You may enter NOW+3' (for current date and time Plus 3 minutes
*Note--the Apostrophe following the number of minutes)

*** Note: Time is REQUIRED for the Date/Time of Exam field in order to establish the entry ***

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